From:	CN=Charles Nace/OU=R2/O=USEPA/C=US
To:	"Reyhan.Mehran"
Cc:	"Accardi-Dey, AmyMarie" ; N=Alice Yeh/OU=R2/O=USEPA/C=US@EPA;"Garvey, Edward A." ; Garvey, Edward A." ; Warner, Len" ; ichardsonN@BATTELLE.ORG
Subject:	Re: Passaic salinity range cited in 2007 csm v 2005 csm
Date:	Wednesday, February 25, 2009 1:46:29 PM
Attachments:	Passaic River - Hyallela salinity issue.doc Nace.Charles@epamail.epa.gov Reyhan.Mehran@n oaa.gov mailto Reyhan.Mehran@noaa.gov EFH%20NB-KLN.pdf

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Yes, I also found a number of other studies that used Hyallela cultured at salinities around 10 ppt (see attached). Some of the studies were conducted locally.

Chuck

"Reyhan.Mehran" <Reyhan.Mehran@noaa.gov>

02/25/2009 01:40 PM

To Charles Nace/R2/USEPA/US@EPA

cc "Accardi-Dey, AmyMarie" <aaccardi-dey@PIRNIE.COM>, Alice Yeh/R2/USEPA/US@EPA, "Garvey, Edward A." <EGarvey@PIRNIE.COM>, "Warner, Len" <LWarner@PIRNIE.COM>

Subject Re: Passaic salinity range cited in 2007 csm v 2005 csm

Yes, I saw that too. Pore water salinities were similar (up to 27 ppt). Also, the guidance for the use of Hyalella for sed tox says they can be run at pore water salinities of 0-15 ppt. The 18 ppt in the Passaic always seemed a non-issue to me. Anyway, I checked with Chris Ingersoll on the 32 ppt just in case that number was real and he didn't think that would be a problem either if the organisms were properly acclimated.

Nace.Charles@epamail.epa.gov wrote:

I also was able to track down a map of the salinity in the Calcasieu

Estuary where Hyallea was used and it shows the salinity ranging from

5-27 ppt (see attached map), not 10 ppt as suggested in the meeting.

The results of the toxicity tests had a table showing water

concentrations at 11 ppt, but that was the concentration of the test water, which was supposed to be 10 ppt.

Chuck

(See attached file: Salinity range section3fig32.pdf)

"Reyhan.Mehran" <Reyhan.Mehran@noaa.gov> 02/25/2009 01:13 PM

To: "Warner, Len" <LWarner@PIRNIE.COM>

cc: Alice Yeh/R2/USEPA/US@EPA, "Garvey, Edward A." <EGarvey@PIRNIE.COM>, "Accardi-Dey, AmyMarie" <aaccardi-dey@PIRNIE.COM>, Charles Nace/R2/USEPA/US@EPA

Subject: Re: Passaic salinity range cited in 2007 csm v 2005 csm

Thanks Len. I'm wondering if the misunderstanding regarding the salinity range is behind the CPG's concerns regarding the use of Hyalella. Hopefully this information will help them.

Warner, Len wrote:

Hello Reyhan and Alice:

Ed G. left a message this morning that the high end of the salinity range on the Passaic should be about 20 ppt. His comments agree with your reference to the USACE report below, suggesting that the salinity in Newark Bay itself is generally no higher than around 20 ppt.

Len

Len Warner

Malcolm Pirnie, Inc.

(914) 641-2972

(914) 641-2455 (fax)

-----Original Message-----

From: Reyhan.Mehran [mailto:Reyhan.Mehran@noaa.gov]

Sent: Monday, February 23, 2009 3:51 PM

To: Warner, Len

Cc: Alice Yeh

Subject: Passaic salinity range cited in 2007 csm v 2005 csm

Len,

Your 2005 CSM cited a salinity range for the Passaic of <0.5 ppt - 18 ppt which is what I had been using. Just checked out the 2007 CSM

though (because the CPG uses it as their source for salinity info in

the

Draft Baseline PFD) and it cites a range of <0.5 ppt - 32 ppt (pg

3-1).

However the figures in the 2007 CSM graph salinities measured by

Rutgers

which are entirely well below about 22 ppt (Figures 3-1a, etc.). Are

the numbers for the "brackish" section of the Passaic cited in the

2007

CSM correct? Fyi, a ACE report on Newark Bay

(http://www.nero.noaa.gov/hcd/EFH%20NB-KLN.pdf) cites a salinity range

of 13.6 ppt - 23.6 ppt with an avg of 19.7 ppt. Thanks for your help.

- Reyhan.

>

Hyallela azteca in estuarine waters

ASTM E1706-05 indicates "1.1.1 Test methods are described for two toxicity test organisms, the amphipod *Hyalella azteca* (*H. azteca*) (see) and the midge *Chironomus dilutus* (formerly known as *C. tentans*; Shobanov et al. 1999.() (see). The toxicity tests are conducted for 10 days in 300-mL chambers containing 100 mL of sediment and 175 mL of overlying water. Overlying water is renewed daily and test organisms are fed during the toxicity tests. Endpoints for the 10-day toxicity tests are survival and growth. These test methods describe procedures for testing freshwater sediments; however, estuarine sediments (up to 15 ppt salinity) can also be tested with *H. azteca.* In addition to the 10-day toxicity test method outlined in and , general procedures are also described for conducting 10-day sediment toxicity tests with *H. azteca* (see) and *C. dilutus* (see)." ASTM E1706-05 Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates.

Delaware Estuary journal – ran tests using Hyallela in Delaware bay by culturing at high salinities. http://www.delawareestuary.org/pdf/CDESM_05-02.pdf

Delaware Estuary – need to contact research to see if we can obtain additional information about the testing – they used hyallela as their estuarine test species http://www.delawareestuary.org/scienceandresearch/Science_Conf/Conference_Presentations/DESC07_No9_MacGillivray.pdf

Canada testing protocol – states that the culture water should be less than or equal to 15 ppt for special needs. http://www.etc-cte.ec.gc.ca/organization/bmd/pubs/pubs_en/1RM33EnglishFinal.pdf

Meadowlands Report – Hyallela were cultured at 10 ppt and used for estuarine sediment testing at several areas around the Meadowlands. http://merilibrary.njmeadowlands.gov/dbtw-wpd/FullText/ML-04-12/Report.pdf

NJDEP document – cites using Hyallela up to 15 ppt and presents results from Elizabeth River with salinities up to 10.5 ppt using hyallela. http://www.state.nj.us/dep/wms/bfbm/download/96h002.pdf

USGS site with reference to Calcasieu Estuary work – Evaluation of the Toxicity of Sediment Samples from Calcasieu Estuary: Comparing the Response of Laboratory Exposures with *Hyalella azteca* and *Ampelisca abdita* *(http://biology.usgs.gov/contaminant/posterlist.html)*

Kemble, N.E., Hardesty, D.K., Ingersoll, C.G., and Wang, N., Columbia Environmental Research Center, USGS, Columbia, MO,
MacDonald, D.D., MacDonald Environmental Sciences Ltd
Shortelle, A., Harding ESE Gainesville, FL
Gaston, G.R, Oxford MS.

The Calcasieu estuary, located southern Louisiana, is a highly industrialized area which has received a variety of anthropogenic contaminants over many years. Recent analyses of sediment samples from the estuary have shown that contaminant levels throughout the

system often exceed chemical benchmarks established to identify potentially toxic conditions. Because corroborating data establishing potential lethal or sublethal effects associated with exposures to these contaminants are limited, we conducted 10- or 28-d whole-sediment tests with the amphipods *Hyalella azteca* and *Ampelisca abdita* and 100 sediment samples collected from the estuary. Sampling locations were selected based on previous chemical surveys of the study area and included a wide range of contaminant levels. Endpoints measured in this study were survival or growth (length) of amphipods. These sediment tests followed methods outlined in USEPA (2000) and ASTM (2001) using a reconstituted overlying test water with a **salinity of 10 ppt**. Hyalella azteca survival data at Day 10 identified 27 of the 100 samples (27%) as toxic (below the reference envelope of 78% survival). Hyalella azteca survival in the 28-d samples identified 31% of the sediment samples as toxic (below the reference envelope of 85% survival). Day 10 *A. abdita* data identified 63% of the sediment samples as toxic (below the reference envelope of 64% survival). Amphipod survival was classified as reduced in both the 10- and 28-d exposures for 21 of the sediment samples. Length analysis of H. azteca identifies additional samples as toxic in both the 10- and 28-d exposures that were classified as non-toxic when using the survival endpoint alone. Data from this study will also be used, along with sediment chemistry data from sediment subsamples, and benthic community surveys in a Sediment Quality Triad approach.